

REMARKS

Status of Claims

Claims 1, 3-5 and 7-8 are pending, of which claim 1 is independent.

Claims 1, 3-5 and 7-8 have been amended to correct informalities in claim language and to more clearly define the intended subject matter. Support for the amendments is found, for example, paragraphs [0015], and [0042]-[0046], Example 2 and FIG. 3 of the present disclosure. Claims 10-14 have been cancelled without prejudice. Care has been taken to avoid introducing new matter. Favorable reconsideration of the application in light of the following comments is respectfully solicited.

Substance of Interview

Applicants thank the Examiner for his time and courtesy during an interview conducted with the Applicants' representative, Takashi Saito, on September 2, 2009. During the interview, the Applicants' representative argued that, at a minimum, the cited references fail to disclose that a ceramic fiber sheet of low-thermal conductivity is sandwiched between the first and second heat-conductive layers, with which the Examiner agreed. Further, the Examiner indicated that the language regarding the refractory metals, carbon and carbon-carbon composite should be clarified.

Claim Rejection - 35 U.S.C. § 103

Claims 1-9 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Li et al. (USP 6,173,755) in view of JP 05-318040 (JP '040). Applicants respectfully traverse this rejection for at least the following reasons.

Applicants respectfully submit that none of the cited references disclose or suggest that “*the casting nozzle comprises a casting nozzle tip having a multilayer structure including a plurality of layers made of different materials comprising first and second heat-conductive layers each made of a material having a heat conductivity equal to or more than 0.2 W/mK, each selected from iron, nickel, titanium, tungsten, molybdenum and alloys including thereof 50% by mass or more, carbon, and a carbon-carbon composite,*” “*the first heat-conductive layer is arranged on an inner circumference of the casting nozzle tip which touches the molten alloy liquid, and the second heat-conductive layer is arranged on a roll side,*” and “*at least one layer of a ceramic fiber sheet of low-thermal conductivity is sandwiched between the first and second heat-conductive layers,*” as recited by amended claim 1.

As set forth above, at a minimum, none of the cited references disclose or suggest that at least one layer of a ceramic fiber sheet of low-thermal conductivity is sandwiched between the first and second heat-conductive layers, as recited by amended claim 1. As such, it is clear that claim 1 and all claims dependent thereon are patentable over the cited references.

Further, Applicants respectfully submit that none of the cited references disclose or suggest that a “high-thermal-conductivity material” having a heat conductivity equal to or more than 0.2 W/mK is used for a portion of the casting nozzle which directly contacts with molten metal. It should be noted that in order to prevent molten metal from solidification in the casting nozzle, a “low-thermal-conductivity material” has generally been used.

In the present disclosure, in order to obtain a thin and wide casting plate, a “high-thermal-conductivity material” is used for controlling a uniform temperature distribution in width direction because one of the most important factors of casting condition is temperature distribution in width direction. Further, by combining a high heat conductive material, for

example, carbon-carbon composite having a thermal conductivity of 25W/mK with a low thermal conductivity material, for example, a ceramic fiber sheet having a thermal conductivity of 0.13W/mK, the present subject matter can control uniform temperature distribution in width direction.

In contrast, the cited references fail to disclose or suggest the combination of a “low thermal-conductivity material” for keeping the uniform temperature distribution and a “high-thermal-conductivity material.” More specifically, as set forth above, the cited references fail to disclose that at least one layer of a ceramic fiber sheet of low-thermal conductivity is sandwiched between the first and second heat-conductive layers.

Applicants respectfully submit that the Examiner misunderstands the nozzle structure of JP ‘040. Specifically, the Examiner’s interpretation that the molten metal is continuously supplied between nozzle 12 and cooling roller 14, is incorrect. As shown in Description of Drawings of JP ‘040, Fig. 2 illustrates an A-A sectional view of Fig. 1 and Fig. 3 illustrates a B-B sectional view of Fig. 1. Although the Examiner asserts that paragraphs [0013] and [0014] of JP ‘040 do not provide enough information, it is clear from these figures that the molten metal is supplied from tundish 10 to cooling roller passing over nozzle 12, more specifically, over ceramic bond layer 28 of Fig. 3. Thus, it is clear that the molten metal is not supplied between nozzle 12 and roll 14 in JP ‘040.

Furthermore, Examiner’s interpretation that the casting roll of JP ‘040 defines the lower potion of the cast strip, whereas the nozzle (edge potion) of the tundish defines the upper potion of the cast strip, is also incorrect. As shown in Figs. 1 and 3 of JP ‘040, the upper surface of molten metal in a B-B section is open, and the nozzle does not define the upper potion of the cast strip.

Based on the foregoing, Applicants respectfully submit that claim 1 and all claims dependent thereon are patentable over the cited references. Thus, it is requested that the Examiner withdraw the rejection of claim 1-9 under 35 U.S.C. § 103(a).

CONCLUSION

Having fully responded to all matters raised in the Office Action, Applicants submit that all claims are in condition for allowance, an indication for which is respectfully solicited. If there are any outstanding issues that might be resolved by an interview or an Examiner's amendment, the Examiner is requested to call Applicants' attorney at the telephone number shown below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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